A New Approach of Presenting Universal Reversible Gate in Nanoscale

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Abstract

Quantum dot Cellular Automata (QCA) is an emerging digital logic representation techniques and one of the possible alternatives to Complementary Metal–Oxide–Semiconductor (CMOS) technology. It satisfies attractive circuit components of smaller size and low power dissipation of new circuit design technologies. Quantum dots are nano architecture and it works based on columbic interaction between two electrons. This paper presents Universal Reversible Gate based on QCA logic gates. For simulating and verifying the proposed gate QCA Designer a familiar simulation and verification tools has been employed. Correctness of the proposed circuit revealed by the simulated output. This paper also presents the VHDL Code of this circuit.

References


**Index Terms**

Computer Science  
Circuits and Systems
Keywords

Quantum dot Cellular Automata (QCA), QCA logic gates, Universal Reversible logic Gate (URG) in QCA, Majority Voter (MV) gate.